

## Ant-Tracking Attribute: A Model for Understanding Production Response

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**Abstract :** Ant Tracking seismic attribute applied over 4-seconds seismic volume revealed structural features triggered by clay diapirism, growth fault development, rapid deltaic sedimentation and intense drilling. The attribute was extracted on vertical seismic sections and time slices. Mega tectonic structures such as growth faults and clay diapirs are visible on vertical sections with obscured minor lineaments or fractures. Fractures are distinctively visible on time slices yielding recognizable patterns corroborating established geologic models. This model seismic attribute enabled the understanding of fluid flow characteristics and production responses. Three structural patterns recognized in the field include: major growth faults, minor faults or lineaments and network of fractures. Three growth faults mapped on seismic section form major deformation bands delimiting the area into three blocks or depocenters. The growth faults trend E-W, dip down-to-south in the basin direction, and cut across the study area. The faults initiating from about 2000ms extended up to 500ms, and tend to progress parallel and opposite to the growth direction of an upsurging diapiric structure. The diapiric structures form the major deformational bands originating from great depths (below 2000ms) and rising to about 1200ms where series of sedimentary layers overlapped and pinchout stratigraphically against the diapir. Several other secondary faults or lineaments that form parallel streaks to one another also accompanied the growth faults. The fracture networks have no particular trend but form a network surrounding the well area. Faults identified in the study area have potentials for structural hydrocarbon traps whereas the presence of fractures created a fractured-reservoir condition that enhanced rapid fluid flow especially water. High aquifer flow potential aided by possible fracture permeability resulted in rapid decline in oil rate. Through the application of Ant Tracking attribute, it is possible to obtain detailed interpretation of structures that can have direct influence on oil and gas production.

**Keywords :** seismic, attributes, production, structural

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